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before proceeding with conservative management. Tubal leiomyomas have been described infrequently in the literature<sup>3</sup>; more unusual is a leiomyoma associated with ectopic pregnancy.<sup>4</sup> The implantation of the conceptus distal to the adjacent leiomyoma suggests an obstructive etiology of the ectopic pregnancy.

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## LAPAROSCOPIC SEGMENTAL BLADDER RESECTION FOR ENDOMETRIOSIS: A REPORT OF TWO CASES

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**Background:** The proper treatment of bladder endometriosis is unknown.

**Case:** Two women with endometriosis involving the full thickness of the bladder wall experienced persistent hematuria during menstruation. They had not responded to previous conservative medical or surgical therapy, so we performed laparoscopic segmental resection, with satisfactory results.

**Conclusion:** Hematuria during menstruation due to endometriosis of the bladder is uncommon. In the two cases presented, good results followed laparoscopic segmental resection. (*Obstet Gynecol* 1993;81:882-4)

The bladder wall is one of the sites least frequently involved with endometriosis. In fact, fewer than 180 cases have been reported.<sup>1</sup> Management options include hormone suppressive therapy,<sup>2</sup> oophorectomy,<sup>3</sup> hysterectomy,<sup>2</sup> and/or segmental cystectomy.<sup>4</sup> The efficacy of conservative treatment is variable, and Andrews<sup>5</sup> regarded it as palliative and temporary. Should

conservative medical and surgical therapy fail, segmental cystectomy is necessary to remove the lesion(s). We report successful laparoscopic segmental cystectomy in two women with this malady.

### Case Reports

#### Case 1

A 37-year-old nulligravid woman presented with pelvic pain and hematuria during menstruation. Diagnostic cystoscopy performed elsewhere 2 years and 11 months before admission diagnosed endometriosis of the bladder wall. Coagulation of the endometriosis was performed by a urologist 16 months later, but the hematuria persisted. Hormone suppressive therapy (danazol and GnRH agonist) stopped the bleeding, but it returned when the therapy was discontinued. An intravenous pyelogram (IVP) was normal. Physical and pelvic examinations revealed marked posterior cul-de-sac nodularity and tenderness. After a thorough consultation, we obtained consent forms appropriate for laparoscopic segmental cystectomy. The woman wished to preserve her reproductive organs.

Intraoperative inspection of the pelvis revealed a normal uterus and tubes; stage IV endometriosis affecting both ovaries, the left bladder dome, and left round ligament; complete cul-de-sac obliteration; and a right ovarian endometrioma. Endometriosis of the left bladder dome included a 3-4-cm nodule involving the bladder serosa, subserosa, muscularis, and mucosa. During cystoscopy, we noted multiple bluish, smooth lesions on the left bladder dome, involving an area of approximately 3.5 × 2.5 × 3.2 cm.

#### Case 2

A 39-year-old nulligravid woman was referred for treatment of bladder endometriosis diagnosed 11 months earlier by

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cystoscopy and biopsy. Presenting symptoms included pain and monthly hematuria. She expressed a strong desire for future fertility. After a thorough consultation, we obtained consent forms appropriate for laparoscopic segmental resection. The patient took danazol, which stopped the hematuria, for approximately 6 months before surgery; however, when drug therapy was discontinued, the hematuria returned.

Intraoperative findings revealed stage IV endometriosis affecting the bladder, appendix, rectum, rectosigmoid colon, rectovaginal septum, and right periureteral area. Adhesions were found to affect the appendix, bowel, and right fallopian tube.

## Materials and Methods

Preoperatively, the patients received a standard bowel preparation and a povidone-iodine douche the night before and immediately preceding the procedure. Each received three 2-g doses of cefoxitin 1 hour preoperatively and 1 g every 6 hours postoperatively for a total of three doses.

Operative laparoscopy was done as described previously.<sup>6</sup> A laparoscope with video camera and three suprapubic portals were placed.<sup>7</sup> We thoroughly evaluated the abdominal and pelvic cavities to assess the extent of endometriosis. Simultaneous cystoscopy was performed, and bilateral ureteral catheters were inserted to better identify the ureters.

We used the CO<sub>2</sub> laser via the operative channel of the laparoscope,<sup>8</sup> hydrodissection,<sup>9</sup> and bipolar electrocoagulation<sup>6-8</sup> to excise the endometriosis nodule, including the mucosal layer. The bladder dome was held near the midline with the grasping forceps and incised with the CO<sub>2</sub> laser using the suction irrigation probe as a backstop. We gently lifted the bladder wall with the grasping forceps and excised the nodule circumferentially 5 mm beyond the lesion. To remove the specimen, a long grasping forceps with teeth was placed in the abdominal cavity through the operative channel of the laparoscope. The tissue was held by a previously placed grasping forceps in the lower right quadrant. The lesion was regrasped using the forceps with teeth and removed from the abdomen with the laparoscope as one unit.

The CO<sub>2</sub> gas distended the bladder cavity, allowing excellent visualization of the organ's interior. After identifying the ureters, we inspected the remainder of the bladder mucosa and closed the bladder with seven interrupted 4-0 polydioxanone through-and-through sutures using extracorporeal knotting.<sup>10</sup>

Cystoscopic evaluation proved the closure to be watertight. Any remaining pelvic endometriosis was treated with previously described techniques.<sup>6</sup> The bladder Foley catheter was left in place. Each woman was released from the hospital the following day and

instructed to take trimethoprim and sulfamethoxazole for 2 weeks. The Foley catheter was removed 10 days later, at which time cystograms were normal.

For both patients, segmental cystectomy took approximately 35 minutes. In the first case, estimated blood loss was less than 150 mL and the procedure lasted 135 minutes. The pathology report confirmed severe endometriosis and fibrosis of the resected bladder wall. No postoperative complications were noted. Thirteen months postoperatively, the patient is doing well, with no hematuria at menstruation.

For the second patient, the remainder of the endometriosis was treated as described previously.<sup>6</sup> The total operative time was 150 minutes and the estimated blood loss was less than 100 mL. No intraoperative or postoperative complications were noted. This woman's postoperative course was similar to that of the first case, and no sign of hematuria is now present at menstruation. Nine months postoperatively, she is doing well and is attempting to conceive.

## Discussion

Symptoms of urinary tract involvement with endometriosis are often cyclic and occur with menstruation. During cystoscopy, endometriosis may appear as a soft, raised, distinct neoplasm.<sup>11</sup> The IVP may show filling defects in the upper tracts of the bladder.<sup>3</sup> More than 80% of all cases of urinary tract endometriosis involve the bladder.<sup>12,13</sup> Urinary bladder endometriosis may be treated surgically by resecting the lesions or medically with hormone suppressive therapy. However, upon discontinuation of medical therapy, the symptoms generally recur. Surgical removal of the ovaries interrupts estrogen stimulation, allowing regression.

Partial cystectomy has proven effective in treating bladder endometriosis when medical therapy fails.<sup>4,14</sup> Of ten patients in a study conducted by Stanley et al,<sup>3</sup> five had partial cystectomy with oophorectomy and two underwent partial cystectomy, for a total of seven operative procedures. Six had good results and one died postoperatively. The remaining three women had only oophorectomy, with good outcome. A later study<sup>15</sup> suggested that oophorectomy alone may be less effective than segmental cystectomy. Recurrent endometriosis is rarely noted after segmental resection without oophorectomy. Further, Anderson and Larsen<sup>2</sup> reported that hysterectomy without oophorectomy was associated with a low recurrence rate. This same study reported that surgery alone offered the best chance for preserving fertility.

We chose partial cystectomy for our patients based on the good results reported previously. In addition,

hormone suppressive therapy had failed and both women desired future fertility. With the recent advances in assisted reproduction technology, we believe both patients have a fair chance for conception. Our positive experiences in treating endometriosis laparoscopically led us to recommend this approach for management of these two patients.<sup>6,16</sup> In trained hands, the laparoscopic approach may prove superior to laparotomy. Endoscopic magnification of the bladder wall planes, coupled with hemostasis facilitated by pneumoperitoneum and the CO<sub>2</sub> laser, allows better identification of anatomy. To the best of our knowledge, these are the first and second cases of successful laparoscopic partial cystectomy. Should this report be confirmed by others, laparoscopic partial cystectomy may become the treatment of choice for vesical endometriosis unresponsive to conservative therapy.

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## SPONTANEOUS VAGINAL EXPULSION OF HULKA CLIPS

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**Background:** Laparoscopic Hulka clip application is a common method of outpatient sterilization in women. We present a patient who experienced spontaneous expulsion of two Hulka clips.

**Case:** A 21-year-old woman was seen 17 months after

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sterilization because of spontaneous, asymptomatic passage of two Hulka clips into the vagina. The passage of one clip went unnoticed by the patient. Radiographic studies confirmed the migration and absence of two Hulka clips previously placed on the left fallopian tube.

**Conclusion:** In rare circumstances, Hulka clips can migrate from the abdominal cavity and be expelled spontaneously, possibly by transuterine passage. This migration may occur without the patient's knowledge. (*Obstet Gynecol* 1993;81:884-6)

Hulka clips have been demonstrated to have negligible side effects, such as fistula formation or allergy, despite their presence as a foreign body. We present a case of spontaneous vaginal expulsion of two Hulka clips.